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Assessment of Learning Style Preferences of First Year Medical Students Studying in North Karnataka Medical College Using Vark Questionnaire-an Observational Study

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ABSTRACT
The learning style is the manner in which students perceive,process and recall their knowledge. The present study is undertaken to evaluate learning style of first year MBBS students. Study was conducted among 93 first year MBBS students at the Department of Physiology, BIMS, Belgavi, by using Fleming's VARK questionnaire (Version 7.8). Based on their VARK score, students were categorized into five groups, Visual, Auditory, Read/write, Kinesthetic and Multimodal type of learners. About 93 students participated in the study out of which 25 were females and 70 were males. Students preferred mode of learning style was expressed in percentile. Out of 93 students 35.5% were unimodal,26.9% were bimodal, 16% were trimodal and 21.5% were multimodal learner. In unimodal learner 12.1% were visual learner, 42.4% were auditory learner and 45.5%were kinesthetic learner.

INTRODUCTION

The learning styles are preferred methods of learning by students in attaining, analysing and interpreting their knowledge[1]. Students learn by using different sensory modalities. Fleming's VARK model explains different sensory modalities used by learners. VARK includes visual, auditory, read-write and kinesthetic modalities. Some students learn concept better by visualizing. Other students learn better with auditory sensation i.e., by listening to lectures and discussion. Read-write learners prefer printed words and texts. Kinesthetic learners gain information by experiencing the concept[2].

Medical students have to grasp vast information in lesser time. Disparity between delivery of instruction and learning style disengages student from learning[3]. If teacher teaches as per student's preferred learning style he is able to connect better with students and students learn better[4]. By knowing students' preference of learning style, the medical instructor can deliver lecture as per students' preference. Medical faculty members have pedagogical knowledge from reading literature on Teaching learning methods and attending workshops.But obtaining knowledge about learning style of student is underutilized approach to improve classroom teaching[5]. Knowledge about students' preferred learning style helps to design lesson plan addressing all the students. So the present study is undertaken to evaluate learning style of first year MBBS students by using Fleming's VARK questionnaire.

Objectives of the study: To evaluate the learning style preference of first year MBBS students using Fleming's VARK questionaire.

MATERIALS AND METHODS

Study design observational study: Study was conducted among 93 first year MBBS students at the Department of Physiology, BIMS, Belgavi, after obtaining institution's ethical clearance and informed consent from students. Fleming's VARK questionnaire (Version 7.8) was administered among students to collect the required data. This questionnaire was developed by Neil. D Fleming in 1987. The VARK questionnaire (Version 7.8) comprised 16 multiple choice questions where in each question has four multiple options (a, b, c and d). Students were advised to choose the correct answer which best explained their preference and were asked to circle the letter next to it. They were also given the freedom of circling more than one option if a single answer did not match their perception. They were further instructed to leave blank any question that they felt did not apply to them. Questionnaire was evaluated on the basis of previously validated scoring instructions and a chart. The VARK questionnaire scoring chart was designed to find the VARK category that each of the answer corresponds to. The letters were circled that corresponds to students' answer. Later their scores that is total number of V's circled, A's circled, R's circled and K's circled were calculated which determines their VARK category. This in turn determines their type of learning style. Based on their VARK score, students were categorized into five groups, Visual, Auditory, Read/write, Kinesthetic and Multimodal type of learners. Students preferred mode of learning style was expressed in percentile.

RESULTS

A total of 100 students of batch 2018-2019 participated in the study. Among 100 students 7 students were chronic absentees. So they were excluded from the study. About 93 students participated in the study out of which 25 were females and 70 were males. Out of 93 students 35.5% were unimodal, 26.9% were bimodal ,16% were trimodal and 21.5% were multimodal learner (Table 1, Fig. 1). In unimodal learner 12.1% were visual learner, 42.4% were auditory learner and 45.5% were kinesthetic (Table 2 Fig. 2). The most preferred bimodal method was auditory kinesthetic followed by visual kinesthetic and visual auditory (Table 3 and Fig. 3). Among trimodal learner 93% preferred visual auditory kinesthetic mode followed by 6% auditory, read and kinesthetic mode (Table 4). Preferred mode of learning in female students was bimodal (36.6%) followed by multimodal (32%) whereas in male student preferred mode of learning was unimodal (41.8%) followed by bimodal (23.5%) Table 5 and Fig. 4.

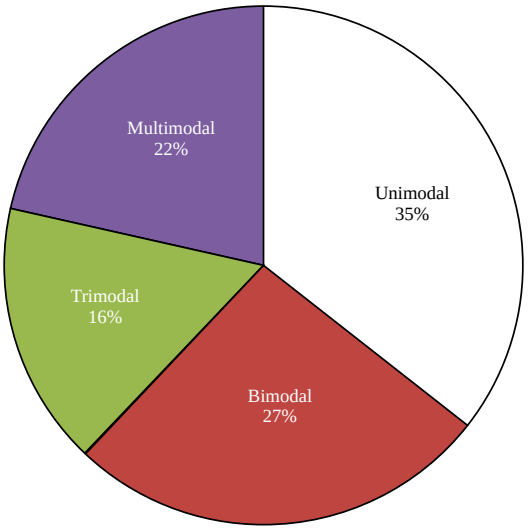

Fig. 1: Learning style preferences of students

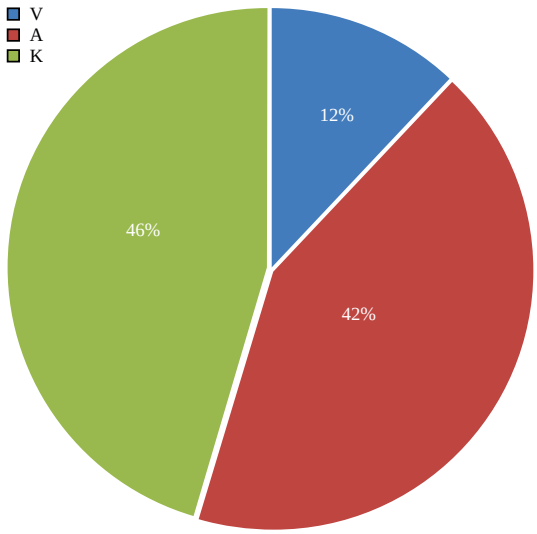

Fig. 2: Unimodal group

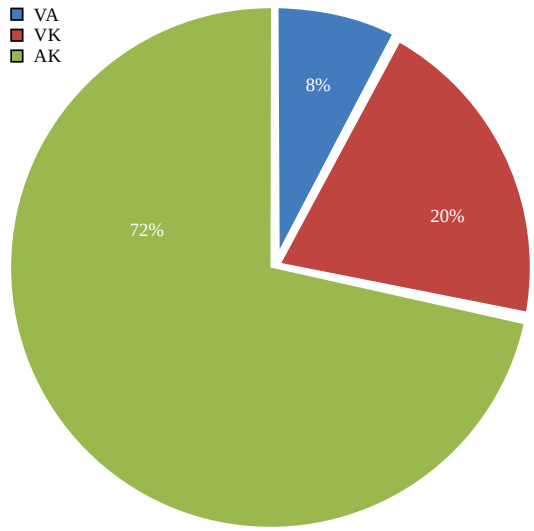

Fig. 3: Bimodal group

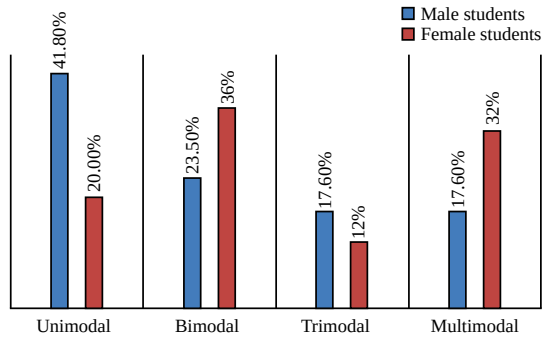

Fig. 4: Sex wise distribution of learning preferences among students

Table 1: Learning style preferences of students

VARK style	No. of students	Percentage
Unimodal	33	35.5
Bimodal	25	26.9
Trimodal	15	16.0
Multimodal	20	21.5
Total students	93	

Table 2: Unimodal group

VARK style	No. of students	Percentage
V	4	12.1
A	14	42.4
K	15	45.5
Total students	33	

Table 3: Bimodal group

VARK style	No. of students	Percentage
VA	2	8
VK	5	20
AK	18	72
Total students	25	

Table 4: Trimodal group

VARK style	No. of students	Percentage
VAK	14	93.3
ARK	1	6.7
Total students	15	

Table 5: Sexwise distribution of Learning preferences among students

VARK style	Male	Percentage	Female	Percentage
Unimodal	28	41.8	5	20
Bimodal	16	23.5	9	36
Trimodal	12	17.6	3	12
Multimodal	12	17.6	8	32
Total no.	68		25	

DISCUSSIONS

Learning styles is defined as 'the composite of characteristic cognitive, affective and physiological characters that serve as relatively stable indicators of how a learner perceives, interacts with and responds to the learning environment'[6]. VARK questionnaire is one such tool which helps the teacher to understand what type of learner the student belongs to and helps the teacher to modify their teaching style. In this study VARK questionnaire was used to find learning style preference in Istyear medical students ,at Department of Physiology, Belgavi Institute of Medical sciences, Belgavi. In our study 35.5% students were unimodal, 26.9% were bimodal, 21.5 % were multimodal learner and 16% were trimodal. Among unimodal learner predominant sensory modality was kinesthetic (46%) followed by auditory (42%) and visual (12%). Our results are consistent with study done among pre-clinical, undergraduate medical students of the International Medical University (IMU) in Kuala Lumpur which had shown 81.9% students preferred unimodal learning style while the remaining 18.1% used a multimodal learning style. Among the unimodal learners, a majority (30.1%) were of Kinesthetic (K) type[1]. In contrast to this the most common VARK mode of distribution among students at the Department of Pharmacology, Kasturba Medical College was quadmodal (36.6%) followed by unimodal (31.3%), bimodal (18.1%) and trimodal (14%). The

redominant sensory modality of learning among unimodal learners was aural (45.5%) followed by kinesthetic (33.1%)[7]. The study done among students enrolled for Human physiology course at San Francisco State University (SFSU) had shown 60% students had multimodal learning preferences and the remaining 40% of the students had one strong learning preference. The kinesthetic learning preference was the most common unimodal learning preference(16%)[8]. Most students (63.8%) of Wayne State University School of Medicine, Detroit, Michigan preferred multiple modes of information presentation whereas 36.1% of the students preferred a single mode of information presentation[9].

In our study preferred mode of learning in male students was unimodal (41.8%), followed by bimodal (23.5%) whereas, in female students learning preference was bimodal (36%) followed by multimodal (32%). It is consistent with previous study done which showed most of the female undergraduate medical students (68.3%) preferred more than one modality of learning[10]. Another study showed Modality preference was similar between genders; both male (56.1%) and female (56.6%) students preferred multimodal learning[3]. In contrast, the study done in students of physiology laboratory course at Michigan State University showed the majority of female students (54.2%) preferred a single mode of information presentation, either V, A, R, or K[11]. Medical and Dental students studying in Lahore, Pakistan preferred multimodal learning style[12].

Instructors can administer the VARK questionnaire to students to raise students' awareness of their preferred learning modality. This may increase students' ability to actively cope with the rigorous academic demands of medical school and to increase motivation among medical students[13]. Students can use information from VARK questionaire to adjust their study habits as per their individual learning strengths[10]. Instructors can also use the information from VARK results to adjust their method of information delivery to correspond with students' preferences[11]. The study done among college students showed when presentation was matched with student learning styles student's examination scores and student's attitude toward learning scores were significantly higher[14]. According to Rochford using learning style responsive materials to instruct remedial writing students at an urban community college resulted in significantly higher achievement[15]. When instruction in undergraduate courses matched students' learning style preferences, they scored higher scores than when instructions were unmatched. Insight into the specific preferences of individual classes would help instructors tailor both their presentations and methods of assessment for each individual class. Limitation of this study was less number of students. Future study can be taken to know the correlation between learning style preferences and their score achieved in the exam.

CONCLUSION

Educators should keep in mind different learning style of students and keep the students active in their learning process. In our study VARK questionnaire was applied among first year medical students studying in BIMS, Belgavi. Abouot 30% students were unimodal, 26% were bimodal, 21% were multimodal learner and 16% were trimodal. Among unimodal learner predominant sensory modality was kinesthetic (46.9%) followed by auditory (43.8%) and visual (12.5%).

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